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#5

SEQUENCE LISTING

<110> al.

<120> Screens and Assays for Agents Useful in Controlling
Parasitic Nematodes

<130> 2002630-0012

<140> 10/051,644

<141> 2002-01-18

<160> 8

<170> PatentIn Ver. 2.1

<210> 1

<211> 425

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Amino Acid
Sequence

<400> 1

Met Ala Val Leu Ala Val Val Leu Leu Leu Ala Cys Leu Glu Arg Ala
1 5 10 15

Val Ala Gln Thr Phe Gly Cys Ser Asn Thr Lys Ile Asn Asp Gln Ala
20 25 30

Arg Lys Met Phe Tyr Asp Ala His Asn Asp Ala Arg Arg Ser Met Ala
35 40 45

Lys Gly Leu Glu Pro Asn Lys Cys Gly Leu Leu Ser Gly Gly Lys Asn
50 55 60

Val Tyr Glu Leu Asn Trp Asp Cys Glu Met Glu Ala Lys Ala Gln Glu
65 70 75 80

Trp Ala Asp Gly Cys Pro Ser Ser Phe Gln Thr Phe Asp Pro Thr Trp
85 90 95

Gly Gln Asn Tyr Ala Thr Tyr Met Gly Ser Ile Ala Asp Pro Leu Pro
100 105 110

Tyr Ala Ser Met Ala Val Asn Gly Trp Trp Ser Glu Ile Arg Thr Val

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115		120		125
Gly Leu Thr Asp Pro Asp Asn Lys Tyr Thr	Asn Ser Ala Met Phe Arg			
130	135	140		
Phe Ala Asn Met Ala Asn Gly Lys Ala Ser	Ala Phe Gly Cys Ala Tyr			
145	150	155		160
Ala Leu Cys Ala Gly Lys Leu Ser Ile Asn Cys Ile Tyr Asn Lys Ile				
	165	170		175
Gly Tyr Met Thr Asn Ala Ile Ile Tyr Glu Lys Gly Asp Ala Cys Thr				
	180	185		190
Ser Asp Ala Glu Cys Thr Thr Tyr Ser Asp Ser Gln Cys Lys Asn Gly				
	195	200		205
Leu Cys Tyr Lys Ala Pro Gln Ala Pro Val Val Glu Thr Phe Thr Met				
	210	215		220
Cys Pro Ser Val Thr Asp Gln Ser Asp Gln Ala Arg Gln Asn Phe Leu				
	225	230		235
Asp Thr His Asn Lys Leu Arg Thr Ser Leu Ala Lys Gly Leu Glu Ala				
	245	250		255
Asp Gly Ile Ala Ala Gly Ala Phe Ala Pro Met Ala Lys Gln Met Pro				
	260	265		270
Lys Leu Val Lys Tyr Ser Cys Thr Val Glu Ala Asn Ala Arg Thr Trp				
	275	280		285
Ala Lys Gly Cys Leu Tyr Gln His Ser Thr Ser Ala Gln Arg Pro Gly				
	290	295		300
Leu Gly Glu Asn Leu Tyr Met Ile Ser Ile Asn Asn Met Pro Lys Ile				
	305	310		315
Gln Thr Ala Glu Asp Ser Ser Lys Ala Trp Trp Ser Glu Leu Lys Asp				
	325	330		335
Phe Gly Val Gly Ser Asp Asn Ile Leu Thr Gln Ala Val Phe Asp Arg				
	340	345		350
Gly Val Gly His Tyr Thr Gln Met Ala Trp Glu Gly Thr Thr Glu Ile				
	355	360		365
Gly Cys Phe Val Glu Asn Cys Pro Thr Phe Thr Tyr Ser Val Cys Gln				

370

375

380

Tyr Gly Pro Ala Gly Asn Tyr Met Asn Gln Leu Ile Tyr Thr Lys Gly
 385 390 395 400

Ser Pro Cys Thr Ala Asp Ala Asp Cys Pro Gly Thr Gln Thr Cys Ser
 405 410 415

Val Ala Glu Ala Leu Cys Val Ile Pro
 420 425

<210> 2

<211> 1341

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:cDNA Nucleotide
 Sequence

<400> 2

atggcgggtat tagcagtggt actacttcta gcatgcctgg agagagcggg tgcacagacg 60
 ttccggtgct ctaacaccaa gatcaatgac caggctcgtg agatgttcta tgaatgctac 120
 aatgatgcaa gacgaagcat ggctaaaggg cttgagccaa acaagtgcgg actcttatct 180
 ggtggaaaaga atgtttatga attgaattgg gattgacgaga tggaaagcaa agctcaggaa 240
 tgggcagacg gatgtcccag ctctttccag acatttgatc caacatgggg gcgaactac 300
 gcgacgtaca tgggatcgat tgctgatccg ctcccatcag ctcccatggc tgtaaatggg 360
 tgggtggtcgg aaattagaac cgtaggactt acggatcctg ataacaagta cactaacagt 420
 gcaatgttcc gatttgctaa tatggcaaat ggtaaagctt cagcttttgg atgtgcatac 480
 gcgttggtgcg caggaaaact atccatcaat tgcatttaca acaagatagg atacatgacc 540
 aatgctatca tttatgaaaa aggagatgcc tgtaccagtg acgctgaatg caccacctac 600
 tcagactcac aatgcaaaaa cggctcttgc tataaggcac ctcaagctcc agtcgttgag 660
 actttcacaa tgtgcccttc ggtcacggac cagtcggatc aggcgcgtca aaacttcttg 720
 gacaccata acaaatgtcg tacaagcctt gccaaaggac ttgaagctga tggaaattgcc 780
 gctggagcat ttgcaccaat ggccaagcaa atgcaaaaac tggtaaaaata cagctgcaca 840
 gttgaagcaa acgccagaac atgggcaaaa ggatgccttt accagcattc aacaagcgca 900
 cagagaccag gactcgggtg aaatctttat atgatcagca ttaacaacat gcctaaaatt 960
 caaaccgcgg aggactcctc aaaggccttg tggccgagt tgaagactt cggagtcggg 1020
 tctgacaaca ttctgaccca agcagttttt gatcgtggcg ttggacatta cacacaaatg 1080
 gcatgggaag gaactactga aattggatgt tttgtggaga attgtccaac attcacttat 1140
 tccgtatgcc aatatgttcc agcgggaaac tacatgaacc aactaatcta taccaagggc 1200
 tcacatgca cagctgacgc cgattgcccc ggaaccaga catgcagtgt cgctgaagca 1260
 ttatgtgtta tcccttagta aattttctat gcaactcttt gaaagtcata aaaaatatgc 1320
 aaaaattaaa aaaaaaaaaa a 1341

<210> 3

<211> 473

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Amino Acid
Sequence

<400> 3

Met	Asn	Val	Val	Leu	Ser	Ala	Val	Thr	Leu	Phe	Leu	Ile	Phe	Arg	Tyr
1				5					10					15	

Ala	Gln	Thr	Val	Asn	Ile	Glu	Gly	Ser	Gly	Gly	Asn	Asp	Glu	Leu	Leu
			20					25					30		

Glu	Gln	Asn	Val	Trp	Asn	Asp	Val	Asp	Asp	Lys	Val	Val	Glu	Ala	Leu
		35					40						45		

Gly	Gly	Leu	Asp	Asp	Glu	Leu	Leu	Thr	Glu	His	Val	Cys	Asn	Lys	Scr
	50					55					60				

Thr	Ile	Thr	Gln	Leu	Gln	Gln	Glu	Ile	Ile	Leu	Thr	Thr	His	Asn	Glu
65					70					75					80

Leu	Arg	Arg	Ser	Leu	Ala	Phe	Gly	Lys	Gln	Arg	Asn	Lys	Arg	Gly	Leu
				85					90					95	

Met	Asn	Gly	Ala	Arg	Asn	Met	Tyr	Lys	Leu	Asp	Trp	Asp	Cys	Glu	Leu
			100					105					110		

Ala	Ser	Leu	Ala	Ala	Asn	Trp	Ser	Thr	Ser	Cys	Pro	Gln	His	Phe	Met
		115				120						125			

Pro	Gln	Ser	Val	Leu	Gly	Ser	Asn	Ala	Gln	Leu	Phe	Lys	Arg	Phe	Tyr
	130					135							140		

Phe	Tyr	Phe	Asp	Gly	His	Asp	Ser	Thr	Val	His	Met	Arg	Asn	Ala	Met
145					150					155					160

Lys	Tyr	Trp	Trp	Gln	Gln	Gly	Glu	Glu	Lys	Gly	Asn	Glu	Asp	Gln	Lys
				165					170					175	

Asn	Arg	Phe	Tyr	Ala	Arg	Arg	Asn	Tyr	Phe	Gly	Trp	Ala	Asn	Met	Ala
			180					185					190		

Lys	Gly	Lys	Thr	Tyr	Arg	Val	Gly	Cys	Ser	Tyr	Ile	Met	Cys	Gly	Asp
		195					200					205			

Gly Glu Ser Ala Leu Phe Thr Cys Leu Tyr Asn Glu Lys Ala Gln Cys
 210 215 220

Glu Lys Glu Met Ile Tyr Glu Asn Gly Lys Pro Cys Cys Glu Asp Lys
 225 230 235 240

Asp Cys Phe Thr Tyr Pro Gly Ser Lys Cys Leu Val Pro Glu Gly Leu
 245 250 255

Cys Gln Ala Pro Ser Met Val Lys Asp Asp Gly Gly Ser Phe Gln Cys
 260 265 270

Asp Asn Ser Leu Val Ser Asp Val Thr Arg Asn Phe Thr Leu Glu Gln
 275 280 285

His Asn Phe Tyr Arg Ser Arg Leu Ala Lys Gly Phe Glu Trp Asn Gly
 290 295 300

Glu Thr Asn Thr Ser Gln Pro Lys Ala Ser Gln Met Ile Lys Met Glu
 305 310 315 320

Tyr Asp Cys Met Leu Glu Arg Phe Ala Gln Asn Trp Ala Asn Asn Cys
 325 330 335

Val Phe Ala His Ser Ala His Tyr Glu Arg Pro Asn Gln Gly Gln Asn
 340 345 350

Leu Tyr Met Ser Ser Phe Ser Asn Pro Asp Pro Arg Ser Leu Ile His
 355 360 365

Thr Ala Val Glu Lys Trp Trp Gln Glu Leu Glu Glu Phe Gly Thr Pro
 370 375 380

Ile Asp Asn Val Leu Thr Pro Glu Leu Trp Asp Leu Lys Gly Lys Ala
 385 390 395 400

Ile Gly His Tyr Thr Gln Met Ala Trp Asp Arg Thr Tyr Arg Leu Gly
 405 410 415

Cys Gly Ile Ala Asn Cys Pro Lys Met Ser Tyr Val Val Cys His Tyr
 420 425 430

Gly Pro Ala Gly Asn Arg Lys Asn Asn Lys Ile Tyr Glu Ile Gly Asp
 435 440 445

Pro Cys Glu Val Asp Asp Asp Cys Pro Ile Gly Thr Asp Cys Glu Lys
 450 455 460

Thr Thr Ser Leu Cys Val Ile Ser Lys
 465 470

<210> 4
 <211> 1422
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:cDNA Nucleotide
 Sequence

<400> 4
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 aatatagaag gcagtgagg aaatgatgag cttcttgagc agaacgtgtg gaacgatgta 120
 gacgacaagg ttgtagaagc acttggtggt cttgatgatg aactgctaac cgaacatgtg 180
 tgtaacaaat caacgatcac tcagctacag caggagatca tcttgacaac ccacaatgaa 240
 ttacgaagat cattggcttt cggaaagcaa agaaacaaga gaggtctcat gaacggtgcg 300
 agaaatatgt ataaactgga ttgggattgt gaactggcat cacttgacgc caattggtca 360
 acctcctgcc ctacgacttt tatgcccga tccggtacttg gctccaacgc tcagcttttt 420
 aagcgtttct atttttattt tgatgggac gactctactg tacatatgcg aaacgcgatg 480
 aagtattggt ggcagcaagg tgaagaaaa ggcaatgagg atcagaaaaa tagattctat 540
 gccagacgaa attatttttg atgggcaaac atggcaaaag gaaaaacata tcgagttgga 600
 tgctcgata ttatgtgcgg cgacggtgaa tctgcacttt tcacttgtct ttataacgaa 660
 aaagcccaat gcgaaaaaga aatgatttac gaaaatggaa aaccctgctg tgaggataaa 720
 gactgtttca catatccagg atcaaaatgt ttagtacctg aaggattatg tcaagcacct 780
 tctatggtaa aggatgatgg aggaagtct caatgtgata actcccttgt gtcagatgtc 840
 acccgcaatt tcactttgga gcaacacaat ttttatagat ctctgtcttg aaaaaggttt 900
 gaatggaatg gagaaacaaa cacttcccag ccaaaggcta gtcaaatgat caaaatggag 960
 tatgactgca tgttggaaag gtttgacaaa aactgggcaa ataattgcgt ttttgcacac 1020
 tcggcacatt acgaaagacc gaatcagggt cagaatctct acatgagttc tttctcaaac 1080
 cctgatccta gaagccttat acatacggcc gtcgagaagt ggtggcagga attggaggag 1140
 ttcggtactc caattgataa cgttctgaca cccgaattgt gggatttgaa agggaaagcg 1200
 ataggacatt acactcagat ggcctgggat cgtacttacc gtcttggttg tggaatcgca 1260
 aactgtccga agatgtcgta cgtggtttgt cactatgggc cagcaggcaa cagaagaac 1320
 aataaaatct atgaaatcgg ggatccttgc gaagtcgatg atgattgccc gatttgaaca 1380
 gattgtgaaa agacaacttc tttatgtgtg atctcaaaat aa 1422

<210> 5
 <211> 218
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:Clustal W
 Alignment of VAP-1, VAP-2, and Selected Other

Nematode VA Proteins.

<400> 5

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Met Phe Ser Pro Val Ile Val Ser Val Ile Phe Thr Ile Ala Phe Cys
 1             5             10             15

Asp Ala Ser Pro Ala Arg Asp Gly Phe Gly Cys Ser Asn Ser Gly Ile
      20             25             30

Thr Asp Lys Asp Arg Gln Ala Phe Leu Asp Phe His Asn Asn Ala Arg
 35             40             45

Arg Arg Val Ala Lys Gly Val Glu Asp Ser Asn Ser Gly Lys Leu Asn
 50             55             60

Pro Ala Lys Asn Met Tyr Lys Leu Ser Trp Asp Cys Ala Met Glu Gln
 65             70             75             80

Gln Leu Gln Asp Ala Ile Gln Ser Cys Pro Ser Ala Phe Ala Gly Ile
      85             90             95

Gln Gly Val Ala Gln Asn Val Met Ser Trp Ser Ser Ser Gly Gly Phe
 100             105             110

Pro Asp Pro Ser Val Lys Ile Glu Gln Thr Leu Ser Gly Trp Trp Ser
 115             120             125

Gly Ala Lys Lys Asn Gly Val Gly Pro Asp Asn Lys Tyr Asn Gly Gly
 130             135             140

Gly Leu Phe Ala Phe Ser Asn Met Val Tyr Ser Glu Thr Thr Lys Leu
 145             150             155             160

Gly Cys Ala Tyr Lys Val Cys Gly Thr Lys Leu Ala Val Ser Cys Ile
      165             170             175

Tyr Asn Gly Val Gly Tyr Ile Thr Asn Gln Pro Met Trp Glu Thr Gly
 180             185             190

Gln Ala Cys Lys Thr Gly Ala Asp Cys Ser Thr Tyr Lys Asn Ser Gly
 195             200             205

Cys Glu Asp Gly Leu Cys Thr Lys Gly Pro
 210             215

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<210> 6

<211> 205

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Clustal W

Alignment of VAP-1, VAP-2, and selected other
nematode VA Proteins.

<400> 6

Asp	Val	Pro	Glu	Thr	Asn	Gln	Gln	Cys	Pro	Ser	Asn	Thr	Gly	Met	Thr		
1				5					10					15			
Asp	Ser	Val	Arg	Asp	Thr	Phe	Leu	Val	His	Asn	Glu	Phe	Arg	Ser	Ser		
			20					25					30				
Val	Ala	Arg	Gly	Leu	Glu	Pro	Asp	Ala	Leu	Gly	Gly	Asn	Ala	Pro	Lys		
		35					40					45					
Ala	Ala	Lys	Met	Leu	Lys	Met	Val	Tyr	Asp	Cys	Glu	Val	Glu	Ala	Ser		
	50					55					60						
Ala	Ile	Arg	His	Gly	Asn	Lys	Cys	Val	Tyr	Gln	His	Ser	His	Gly	Glu		
65					70					75					80		
Asp	Arg	Pro	Gly	Leu	Gly	Glu	Asn	Ile	Tyr	Lys	Thr	Ser	Val	Leu	Lys		
				85					90					95			
Phe	Asp	Lys	Asn	Lys	Ala	Ala	Lys	Gln	Ala	Ser	Gln	Leu	Trp	Trp	Asn		
		100						105					110				
Glu	Leu	Lys	Glu	Phe	Gly	Val	Gly	Pro	Ser	Asn	Val	Leu	Thr	Thr	Ala		
	115						120						125				
Leu	Trp	Asn	Arg	Pro	Gly	Met	Gln	Ile	Gly	His	Tyr	Thr	Gln	Met	Ala		
	130					135						140					
Trp	Asp	Thr	Thr	Tyr	Lys	Leu	Gly	Cys	Ala	Val	Val	Phe	Cys	Asn	Asp		
145					150					155					160		
Phe	Thr	Phe	Gly	Val	Cys	Gln	Tyr	Gly	Pro	Gly	Gly	Asn	Tyr	Met	Gly		
			165						170					175			
His	Val	Ile	Tyr	Thr	Met	Gly	Gln	Pro	Cys	Ser	Gln	Cys	Ser	Pro	Gly		
		180						185						190			
Ala	Thr	Cys	Ser	Val	Thr	Glu	Gly	Leu	Cys	Ser	Ala	Pro					
	195						200					205					

<210> 7

<211> 207

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Clustal W
Alignment of VAP-1, VAP-2, and selected other
nematode VA proteins.

<400> 7

Met Asn Tyr Leu Leu Leu Val Val Ala Leu Ala Val Gly Cys Ser Ala
1 5 10 15

Asp Phe Gly Ser Ser Gly Gln Asn Gly Ile Ile Asn Ala His Asn Thr
20 25 30

Leu Arg Ser Lys Ile Ala Lys Gly Thr Tyr Val Ala Lys Gly Thr Gln
35 40 45

Lys Ser Pro Gly Thr Asn Leu Leu Lys Met Lys Trp Asp Ser Ala Val
50 55 60

Ala Ala Ser Ala Gln Asn Tyr Ala Asn Gly Cys Pro Thr Gly His Ser
65 70 75 80

Gly Asp Ala Gly Leu Gly Glu Asn Leu Tyr Trp Tyr Trp Thr Ser Gly
85 90 95

Ser Leu Gly Asp Leu Asn Gln Tyr Gly Ser Ala Ala Ser Ala Ser Trp
100 105 110

Glu Lys Glu Phe Gln Asp Tyr Gly Trp Lys Ser Asn Leu Met Thr Ile
115 120 125

Asp Leu Phe Asn Thr Gly Ile Gly His Ala Thr Gln Met Ala Trp Ala
130 135 140

Lys Ser Asn Leu Ile Gly Cys Gly Val Lys Asp Cys Gly Arg Asp Ser
145 150 155 160

Asn Gly Leu Asn Lys Val Thr Val Val Cys Gln Tyr Lys Pro Gln Gly
165 170 175

Asn Phe Ile Asn Gln Tyr Ile Tyr Val Ser Gly Ala Thr Cys Ser Gly
180 185 190

Cys Pro Ser Gly Thr Ser Cys Glu Thr Ser Thr Gly Leu Cys Val
 195 200 205

<210> 8

<211> 231

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Clustal W
 Alignment of VAP-1, VAP-2, and selected other
 nematode VA proteins.

<400> 8

Met Ser Asn Lys Leu Ile Ile Ser Ile Leu Ile Leu Thr Ile Ile Tyr
 1 5 10 15

Thr Val Val Asn Ser Leu Thr Val Pro Glu Gln Asn Ala Val Val Asp
 20 25 30

Cys Ile Asn Lys Tyr Arg Ser Gln Leu Ala Asn Gly Lys Thr Lys Asn
 35 40 45

Lys Asn Gly Gly Asn Phe Pro Ser Gly Lys Asp Ile Leu Glu Val Ser
 50 55 60

Tyr Ser Lys Asp Leu Glu Lys Ser Ala Gln Arg Trp Ala Asn Lys Cys
 65 70 75 80

Ile Phe Asp His Asn Gly Thr Asp Leu Tyr Ser Gly Gly Lys Phe Tyr
 85 90 95

Gly Glu Asn Leu Tyr Leu Asp Gly Asp Phe Glu His Lys Asn Ile Thr
 100 105 110

Gln Leu Met Ile Asp Ala Cys Asn Ala Trp Trp Gly Glu Ser Thr Thr
 115 120 125

Asp Gly Val Pro Pro Ser Trp Ile Asn Asn Phe Leu Pro Thr Asp Asn
 130 135 140

Lys Glu Asn Asp Glu Lys Phe Glu Ala Val Gly His Trp Thr Gln Met
 145 150 155 160

Ala Trp Ala Lys Thr Tyr Gln Ile Gly Cys Ala Leu Lys Val Cys His
 165 170 175

Lys Pro Asp Cys Asn Gly Asn Leu Ile Asp Cys Arg Tyr Tyr Pro Gly
180 185 190

Gly Asn Gly Met Gly Ser Pro Ile Tyr Gln Gln Gly Lys Pro Ala Ser
195 200 205

Gly Cys Gly Lys Ala Gly Pro Ser Thr Lys Tyr Ser Gly Leu Cys Lys
210 215 220

Pro Asp Pro His Gln Asn Asn
225 230